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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/541,508

05/30/2006

Andreas Christian Wolf

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EXAMINER

HUGHES, EBONI N

ART UNIT

PAPER NUMBER

2611

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/541,508	Applicant(s) WOLF, ANDREAS CHRISTIAN	
	Examiner EBONI HUGHES	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20-22 is/are allowed.
- 6) ☒ Claim(s) 11-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 13-17, 19 are objected to because of the following informalities:

Claims 13-17: Each recites an improper dependence to cancelled Claim 1.

Claim 19: The right parentheses should be removed after the word "window".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
3. Claims 11, 12, 14-17, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over GB 1,372,137 to French et al ("French") in view of U.S. Patent 5,504,781 to Wolf.

Regarding **Claim 11**, French teaches *a method for transmitting a data word containing a sequence of individual data in sequential data positions, the method comprising: making a code word supply available, a number of individual codes words of the supply corresponding at least to the number of data positions of the data word* (pg. 3, lines 32-34; pg. 3, line 60 - pg. 4, line 5), where the autocorrelation codes are derived from a cyclic binary sequence by shifting the starting position of each code in the cycle by one bit position with respect to the previous code. The autocorrelation codes are obtained by starting at progressive

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bit positions in a repetitive cyclic maximal length PRBS sequence. By starting at successive bit positions in the cyclic sequence, 2^n-1 different codes are produced, each of length 2^n-1 bits;

a cross-correlation function of each code word with a specific reference having in each case a distinct, detectable extreme value having a position is characteristic of the individual code word (pg. 2, lines 46-57; pg. 3, lines 23-25; pg. 3, line 60 - pg. 4, line 5) where binary codes correlated with itself produces a first known constant value and when correlated with any other one of the codes always produces a second known constant value, the two constant values each being an integer other than zero. A code generator for generating a set of binary autocorrelation codes wherein each code has the same number of bit positions as the number of samples in the set of samples;

assigning an individual code word of the number of code words to each data position of the data word (pg. 4, lines 1-2) where by starting at successive bit positions in the cyclic sequence, 2^n-1 different codes are produced, each of length 2^n-1 bits;

combining the assigned code word with the particular datum of the data position so as to form a data position-specific combination result (pg. 3, lines 8-12);

summing the data position-specific combination results to form a sum word (pg. 3, lines 8-17);

transmitting the sum word to a receiver (pg. 3, lines 15-17);

French does not expressly disclose reconstructing the original data word from the extremes of the resulting vector.

Wolf teaches *cross-correlating the received sum word with a further reference, the further reference, when cross-correlated with each code word, having in each case a distinct, detectable extreme value having a position being characteristic of the individual code word* (Abstract, Col. 1, lines 15-23; Col. 6, line 38 – Col. 7, line 6) where to increase the number of code words, a second code-word generator and a third codeword generator, having different generator polynomials, are used for coding binary code words, further binary code words, and still further binary code words, by cyclical shifting and inversion in a manner similar to that above. On the reception end of the transmission path, second and third cross-correlators are additionally used. The main maximum of each of the resulting three cross-correlation functions is detected and the data word transmitted is recovered based on a main maximum with a value above a predetermined value and from the position of this main maximum; *and*

Wolf teaches *reconstructing from the position and magnitude of the values of the thus formed correlation function, the particular data position-specific data of the data word in that, following the fixed assignment, a corresponding datum is assigned to each value* (Abstract, Col. 2, lines 31-41; Col. 7, lines 1-6) where three cross-correlation functions are formed on the reception end of the transmission path by means of a cross-correlator, a second cross-correlator and a third cross-correlator, each having different correlation references. The height

of the amounts of the main maxima of the cross-correlation functions are examined. If a height of the amount of a main maximum lies above a predetermined value, its relative position is determined and the datum transmitted in each case is recovered therefrom, considering also the sign of the corresponding main maximum. The suggestion/motivation would have been in order to use the relative position and sign of the main maximum of the cross-correlation function at the reception end to recover the data sent over the transmission path (Col. 1, lines 27-29).

Regarding **Claim 12**, French and Wolf teach each of the limitations of **Claim 11**, upon which **Claim 12** depends. Wolf teaches *wherein the code words are formed by cyclical shifting of an m-sequence, a Barker code, a Gordon Mills Welch (GMW) sequence or a Gold code* (Col. 7, lines 13-15). In addition, the same motivation is used as in the rejection of Claim 11.

Regarding **Claim 14**, French and Wolf teach each of the limitations of **Claim 11**, upon which **Claim 14** depends. Wolf teaches *wherein unipolar dual values (0,1) are permitted for the data word* (Col. 3, lines 35-50; Fig. 2; Eq (4)). In addition, the same motivation is used as in the rejection of Claim 11.

Regarding **Claim 15**, French and Wolf teach each of the limitations of **Claim 11**, upon which **Claim 15** depends. French further teaches *wherein bipolar dual values (-1,1) are permitted for the data word* (pg. 4, lines 5-7).

Regarding **Claim 16**, French and Wolf teach each of the limitations of **Claim 11**, upon which **Claim 16** depends. Wolf teaches *wherein ternary or*

higher base number systems being permitted for the data word (Col. 3, lines 23-27). In addition, the same motivation is used as in the rejection of Claim 11.

Regarding **Claim 17**, French and Wolf teach each of the limitations of **Claim 11**, upon which **Claim 17** depends. French further teaches *wherein bipolar sequences are used as code words* (pg. 4, lines 5-7).

Regarding **Claim 19**, French and Wolf teach each of the limitations of **Claim 11**, upon which **Claim 19** depends. French further teaches *wherein the sum words are provided with a cyclic extension dimensioned so that, in spite of transmission-induced sum word interferences within a correlation window), only sum word components occur which originate from one single, original sum word* (pg. 3, lines 10-17, 32-34; pg. 8, lines 10-45).

4. Claims 13, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over GB 1,372,137 to French et al ("French") in view of U.S. Patent 5,504,781 to Wolf and in further view of U.S. Patent 7,200,192 to Wei et al ("Wei").

Regarding **Claim 13**, French and Wolf teach each of the limitations of **Claim 11**, upon which **Claim 13** depends. Wei teaches *wherein the code words are formed by cyclical shifting of a complementary code keying code* (Col. 1, lines 24-28). The suggestion/motivation would have been in order to exhibit good auto-correlation and cross-correlation properties (Col. 1, lines 15-16).

Regarding **Claim 18**, French and Wolf teach each of the limitations of **Claim 11**, upon which **Claim 18** depends. Wei teaches *wherein the sum word is modulated for transmitting multiphase shift keying and, in the process, a*

multiphase shift keying modulation stage is used that is of a higher level than would be necessary based on the number of possible values that the sum word is able to assume (Col. 1, lines 36-60). In addition, the same motivation is used as in the rejection of Claim 13.

Allowable Subject Matter

5. Claims 20-22 are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EBONI HUGHES whose telephone number is (571)270-7453. The examiner can normally be reached on 7:30 AM - 5 PM, M-F, alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

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/EBONI HUGHES/
Examiner, Art Unit 2611

/CHIEH M FAN/
Supervisory Patent Examiner, Art Unit 2611